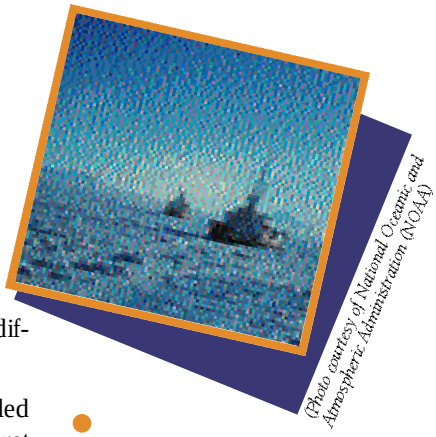
Processor Enables More Easily Obtainable Satellite Imagery



(Photo courtesy of National Oceanic and Atmospheric Administration (NOAA))

Pursuing satellite applications, Essex has cited uses such as iceberg detection, quickly and precisely informing local monitoring stations about icebergs.

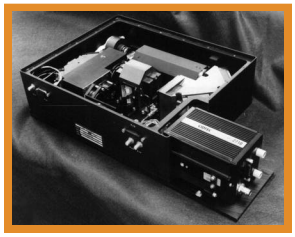
Data from radar satellite images are usually collected, stored, and processed at one central location, where they are then converted to a standard image product. Organizations that want information must contact the data bank, which forwards these products to them. However, end users who need to obtain tailored information or nonstandard products often find the process difficult and time-consuming.

Essex Corporation (Columbia, MD) has developed a high-speed optoelectronic processor called ImSyn™, which will allow organizations to use their own workstations to tap into and interpret satellite data. By using these processors at their workstations, groups can obtain the specific data they need without going through a central station. In addition, when installed directly on a satellite, Essex's product could allow satellites to transmit 10 times more information stored onboard than is currently possible. ImSyn™ is expected to be on the market in 1996.

> ESSEX'S IMSYN™ WILL ALLOW LARGE COMPANIES AND ORGANIZATIONS TO USE THEIR OWN WORKSTATIONS TO TAP INTO AND INTERPRET SATELLITE DATA.

Pursuing satellite applications, Essex has cited uses such as iceberg detection. The processor could quickly and precisely inform local monitoring stations about icebergs in the area. The processor would give sea captains the ability to access current information very quickly, which is essential since icebergs drift, are often hidden by cloudy weather, and present danger to unsuspecting ships. While satellites currently monitor iceberg activity, only selected, small areas are processed in real time.

ImSyn™ also addresses limitations associated with current optoelectronic processors, which require data to fit into rigid x-y coordinates for processing. In a less-than-perfect world, most data do not fall on the crosshair zero reference but rather at the limits of an image, and normally require significant computation to resolve accurately. With its flexible data-formatting capabilities, ImSyn™ can look into this “gray area” and quickly and accurately reference it, thereby giving the user a more precise presentation of the data. This capability makes the Essex processor useful in applications such as medicine where extreme accuracy in imaging is critical.



ImSyn™, shown above, can form images from a wide range of sensor data. It uses very little power and requires no special cooling.

For example, ImSyn™ could be used as a component of magnetic resonance imaging (MRI) systems, greatly improving images while increasing processor speed. Measuring 1.5 cubic feet and weighing only 50 pounds, it could also reduce the size and weight of the current refrigerator-sized MRI processors. The device may also be used to diagnose tissue or specimen samples in real time where pattern recognition—such as defining cancer cells—could mean the difference between life and death in early detection of disease.

Essex Corp. is discussing applications with the medical community and has begun negotiations with other interested parties, including some in the international arena. The processors are programmable, so one workstation can be adapted to many applications—for example, allowing one system to support an entire radiology department.

About The Technology

ImSyn™ can form images from a wide range of sensor data. It uses very little power and requires no special cooling even though it processes at supercomputing speeds. It incorporates digital electronics integrated with an optical module and outputs a digital product. The digital electronics allow ImSyn™ to offer precise control of signal input, noiseless integration of detector output, and flexible formatting of input data and digital output. The processor's optical module matches the sensor's coordinate systems using naturally parallel transforms to process images quickly. Because it does not depend on fixed algorithms for image formation, it rapidly integrates final results into complex digital image output.